

WHAT IS CLAIMED IS:

1. A control assembly for controlling a paraglider aerodynamic control surface to influence flight characteristics utilizing gravity forces acting on a load carried by a paraglider upon relative movement of the load and the paraglider, said control assembly comprising:

a rotatable load bearing roller with a load bearing strap wound thereon which in use supports the load,

a rotatable flaring strand roller with a flaring strand wound thereon which flaring strand in use is connected with an air foil control section of the paraglider,

said load bearing roller and said flaring strand roller being coupled to one another such that when rotated together in one rotational direction, the load bearing strand is unwound from the load bearing roller and the flaring strand is wound onto the flaring strand roller whereby the distance between the flaring strand roller and the air foil control section of the paraglider is shortened to thereby move the air foil section for flaring the paraglider when the load bearing roller is rotated in said rotational direction by load forces from the load acting on the load bearing strap,

a latching mechanism operable to selectively latch the load bearing roller and flaring strand roller to prevent rotation, thereof unlatching apparatus for unlatching the latching mechanism, and

a controller responsive to a signal indicative of a distance between a local ground surface and the load to control unlatching of the latching mechanism.

2. A control assembly according to claim 1, wherein said load bearing roller and said flaring strand roller are mounted on a control unit along with the latching mechanism.

3. A control assembly according to claim 2, wherein said control unit is connected in use by

paraglider straps with the paraglider, and

wherein said control unit is connected by said load bearing strap with a load.

4. A control assembly according to claim 2, wherein said control unit is connected by paraglider straps with the paraglider,

wherein said control unit is fixedly connected with a load, and

wherein said load bearing strap is one of said paraglider straps,

whereby the flaring strand is rolled up on the flaring strand roller upon rotation of said load bearing roller in said rotational direction with consequent raising of the paraglider with respect to the load.

5. A control assembly according to claim 1, comprising:

a pair of said load bearing straps and associated load bearing rollers; and

a pair of said flaring strands and associated flaring strand rollers.

6. A control assembly according to claim 2, comprising:

a pair of said load bearing straps and associated load bearing rollers, and

a pair of said flaring strands and associated flaring strand rollers.

7. A control assembly according to claim 3, comprising:

a pair of said load bearing straps and associated load bearing rollers, and

a pair of said flaring strands and associated flaring strand rollers.

8. A control assembly mechanism according to claim 4, comprising:

a pair of said load bearing straps and associated load bearing rollers, and

a pair of said flaring strands and associated flaring strand rollers.

9. A control assembly according to claim 1, wherein said controller includes a laser altitude

measuring unit for measuring the altitude above ground of the paraglider system.

10. A control assembly according to claim 1, wherein the unlatching apparatus has an unlatching bolt prestressed with a traction rope into its latching position and a cutting device interacting with the traction rope, whereby the cutting device can cut through the traction rope upon a signal from the controller to unlatch the latching mechanism to conduct a flaring maneuver.

11. A control assembly according to claim 1, wherein at least two of said load-bearing rollers are coupled respectively with one or said flaring strand rollers for accommodating one flaring strand each, whereby the two pairs of one flaring strand roller and a load-bearing strap roller respectively are rotationally coupled on each side of a transmission unit in reference to the flight direction by a rotational axle.

12. A control assembly according to claim 2, wherein at least two of said load-bearing rollers are coupled respectively with one or said flaring strand rollers for accommodating one flaring strand each, whereby the two pairs of one flaring strand roller and a load-bearing strap roller respectively are rotationally coupled on each side of a transmission unit in reference to the flight direction by a rotational axle.

13. A control assembly according to claim 3, wherein at least two of said load-bearing rollers are coupled respectively with one or said flaring strand rollers for accommodating one flaring strand each, whereby the two pairs of one flaring strand roller and a load-bearing strap roller respectively are rotationally coupled on each side of a transmission unit in reference to the flight direction by a rotational axle.

14. A control assembly according to claim 4, wherein at least two of said load-bearing rollers are coupled respectively with one or said flaring strand rollers for accommodating one flaring

strand each, whereby the two pairs of one flaring strand roller and a load-bearing strap roller respectively are rotationally coupled on each side of a transmission unit in reference to the flight direction by a rotational axle.

15. A control assembly according to claim 9, wherein at least two of said load-bearing rollers are coupled respectively with one or said flaring strand rollers for accommodating one flaring strand each, whereby the two pairs of one flaring strand roller and a load-bearing strap roller respectively are rotationally coupled on each side of a transmission unit in reference to the flight direction by a rotational axle.

16. A control mechanism according to claim 2, wherein said latching mechanism includes latching elements provided on the control unit that fix various latching positions in interaction with the latching apparatus for adapting the flaring traction path to control lift over time during flaring.

17. A control mechanism according to claim 3, wherein said latching mechanism includes latching elements provided on the control unit that fix various latching positions in interaction with the latching apparatus for adapting the flaring traction path to control lift over time during flaring.

18. A control mechanism according to claim 4, wherein said latching mechanism includes latching elements provided on the control unit that fix various latching positions in interaction with the latching apparatus for adapting the flaring traction path to control lift over time during flaring.

19. A control assembly according to claim 1, wherein an adjusting device is provided for adjusting the flaring traction path with which the adjustment of the flaring traction path can take place manually or through a regulating or controlling device.

20. A control assembly according to claim 1, wherein a braking apparatus is provided with which adjustment of braking action can be adapted to the cable line speed of the flaring strand upon unlatching of the latching mechanism

21. A control assembly according to Claim 20, wherein one adjustment device is provided for adjusting the braking action upon rolling off the flaring strand with which the adjustment of the braking action can take place manually or through a regulation and controlling apparatus.

22. A control assembly according to claim 11, wherein the controller includes an unlatching apparatus for unlatching the latching mechanism which has a latching element interacting with the transmission unit,

wherein a compensation apparatus is provided in the form of a pivoted balancing beam forming first and second lever arms,

wherein a first prestress apparatus acts in accordance with its deflection upon the first lever arm, whereby the deflection of the first prestress apparatus is determined by the tensile force of a first strand connected with a weight, whereby the weight hangs from the unlatching apparatus at a predetermined distance that corresponds to a predetermined target altitude for triggering the flaring maneuver,

wherein a second strand connected with the weight is connected with the second lever arm so that a tensile force corresponding to the weight acts upon the second lever arm,

wherein, a second prestress apparatus can optionally act upon this second lever arm that exerts on this a spring force opposed to the tensile force exerted by the second strand, and

wherein the first lever arm and the spring force engaging upon this as a function of the rotation position of the balancing beam as well as the second lever arm and the spring forces engaging upon this as a function of the balancing beam as well as the weight are dimensioned

such that the balancing beam rotates when the weight is subjected to stress in the direction of the force of gravity.

23. A control assembly according to claim 12, wherein the controller includes an unlatching apparatus for unlatching the latching mechanism which has a latching element interacting with the transmission unit,

wherein a compensation apparatus is provided in the form of a pivoted balancing beam forming first and second lever arms,

wherein a first prestress apparatus acts in accordance with its deflection upon the first lever arm, whereby the deflection of the first prestress apparatus is determined by the tensile force of a first strand connected with a weight, whereby the weight hangs from the unlatching apparatus at a predetermined distance that corresponds to a predetermined target altitude for triggering the flaring maneuver,

wherein a second strand connected with the weight is connected with the second lever arm so that a tensile force corresponding to the weight acts upon the second lever arm,

wherein, a second prestress apparatus can optionally act upon this second lever arm that exerts on this a spring force opposed to the tensile force exerted by the second strand, and

wherein the first lever arm and the spring force engaging upon this as a function of the rotation position of the balancing beam as well as the second lever arm and the spring forces engaging upon this as a function of the balancing beam as well as the weight are dimensioned such that the balancing beam rotates when the weight is subjected to stress in the direction of the force of gravity.

24. Load-bearing paraglider system with a control unit having a transmission unit for implementation of controlling flight maneuvers on the basis of activating a flaring strand using the force of the weight of the load with a load-bearing paraglider with a trailing edge, with paraglider straps that connect the load-bearing paraglider with the control unit, with a

load suspended on the load-bearing paraglider using load-bearing straps and with at least one flaring strand connected with the trailing edge,

wherein the control unit includes:

a transmission unit with at least two load-bearing rollers for same direction rolling up of respectively two load-bearing straps for accommodating the flare strand, whereby at least two load-bearing rollers and at least one flaring strand roller are coupled in the direction of rotation, whereby at least one flaring strand is rolled up so that the load-bearing straps are rolled off in a predetermined direction of rotation when at least one flaring strand is rolled up in the same direction of rotation, and

an unlatching apparatus for unlatching the transmission unit as well as an altitude sensor for measuring the momentary flight altitude of the load and a comparison apparatus for comparing the altitudes measured with a target altitude are provided so that the comparison apparatus can activate the unlatching apparatus upon reaching the target altitude.

25. Load-bearing paraglider system with a control unit having a transmission unit for implementing controlled flight maneuvers on the basis of the activation of a flaring strand, with a load hanging on the load-bearing paraglider using load-bearing straps and with at least one flaring strand connected with the trailing edge for implementing controlled and curved flight maneuvers on the basis of activating the flaring maneuver, wherein the control unit includes:

a transmission unit with at least two load-bearing rollers for same direction rolling up of respectively two load-bearing straps as well as at least one flaring strand roller for accommodating a flaring strand, whereby at least two load-bearing rollers and at least one flaring strand roller are coupled in the direction of rotation, whereby at least one flaring strand is rolled up on the allocated flaring strand roller so that the load-bearing straps are rolled off in a predetermined direction of rotation when at least one flaring strand is rolled up in the same direction of rotation, so that the activation of the flaring strand results during a raising of the load-bearing paraglider with a simultaneous activation of the trailing edge, and

an unlatching apparatus for unlatching the transmission unit as well as an altitude sensor for measuring the momentary flight altitude of the load and a comparison apparatus for comparing the altitudes measured with a target altitude are provided so that the comparison apparatus can activate the unlatching apparatus upon reaching the target altitude.

26. A load bearing paraglider system including a paraglider, a load carried by the paraglider and a control mechanism for controlling a paraglider trailing edge section to implement flaring maneuvers of the paraglider utilizing gravity force acting on the load upon relative movement of the load and the paraglider, said control mechanism comprising:

a rotative load bearing roller with a load bearing strap wound thereon which in use supports the load,

a rotatable flaring strand roller with a flaring strand wound thereon which flaring strand in use is connected with an air foil control section of the paraglider,

said load bearing roller and said flaring strand roller being coupled to one another such that when rotated together in one rotational direction, the load bearing strand is unwound from the load bearing roller and the flaring strand is wound onto the flaring strand roller whereby the distance between the flaring strand roller and the air foil control section of the paraglider is shortened to thereby move the air foil section when the load bearing roller is rotated in said rotational direction by load forces from the load acting on the load bearing strap,

a latching mechanism operable to selectively latch the load bearing roller and flaring strand roller to prevent rotation, thereof unlatching apparatus for unlatching the latching mechanism, and

a controller responsive to a signal indicative of a distance between a local ground surface and the load to control unlatching of the latching mechanism.